Research Note

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SPACE MANAGEMENT AT FIRE-WEATHER STATIONS

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ABSTRACT

This paper provides criteria for proper use of instrument shelters and suggests installation of additional special purpose shelters for other than temperature-recording instruments.

A well-equipped fire station can provide a wide range of reliable weather data both for fire-weather forecasting and for fire-danger rating purposes. Unfortunately, this capability can be compromised by poor space management. Too often, the instruments listed, such as the wind counter, and the wind direction indicator, are installed in the weather station's lone instrument shelter (fig. 1).

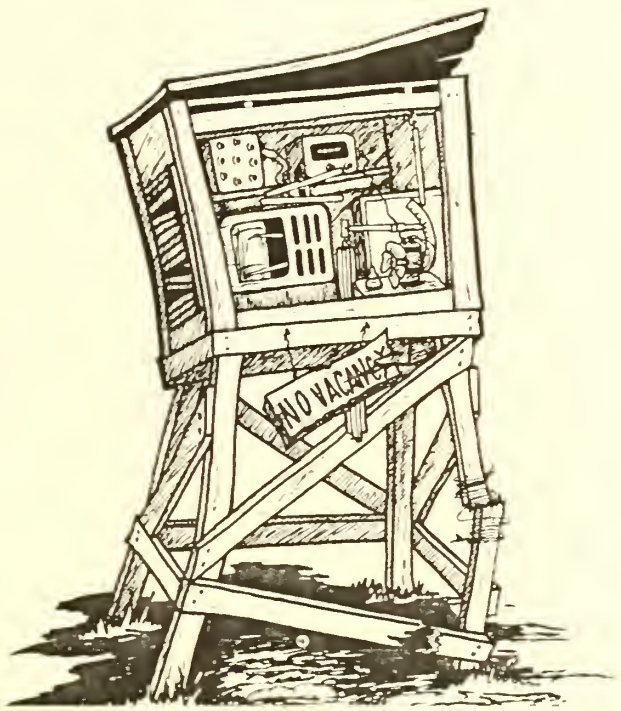


Figure 1.--This situation is not nearly as exaggerated as you might think.

[1]Research forester, stationed at Northern Forest Fire Laboratory, Missoula, Mont.

PURPOSE OF INSTRUMENT SHELTER

The instrument shelter (more properly termed the thermometer shelter or thermoscreen) was specifically designed to minimize radiant heat effects while allowing free movement of outside air past the temperature-sensitive instruments inside. Therefore, use of the instrument shelter to house a variety of instruments that are not temperature sensitive, in addition to the maximum-minimum thermometer, psychrometer, and hygrothermograph, can seriously interfere with the shelter's primary function; the free flow of air through the shelter is restricted and a source of radiant heat supplied inside the shelter. Temperature errors resulting from such interference are especially likely during periods of light wind.

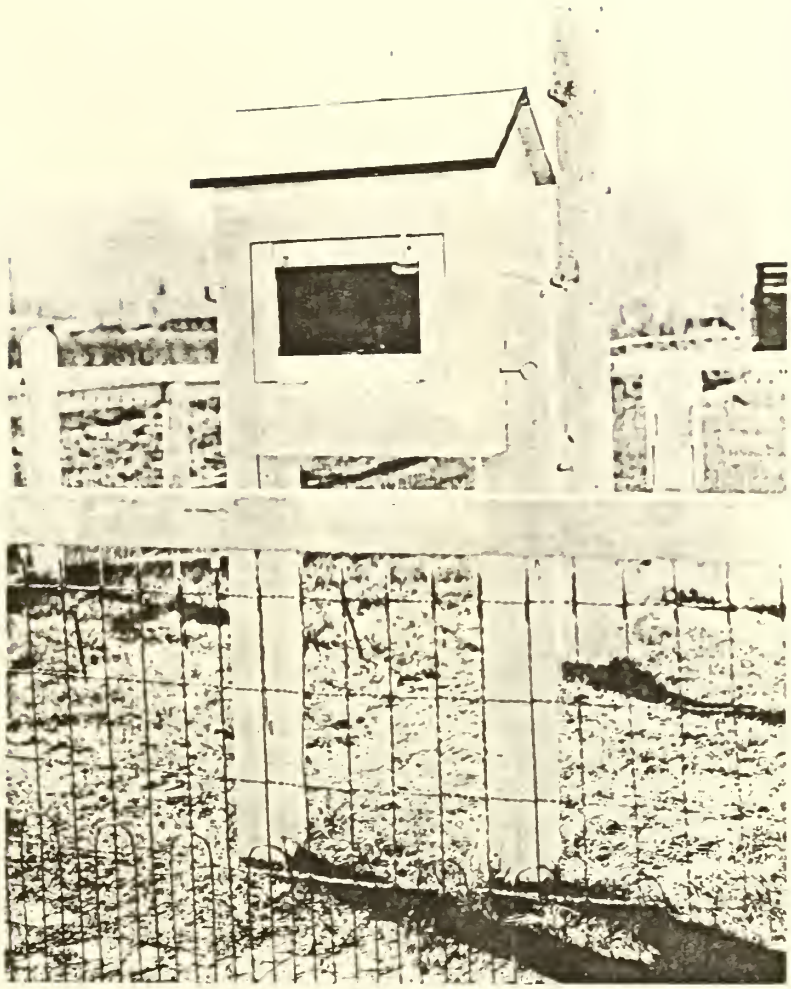
SCALE SHELTERS

The answer to the space problem at fire-weather stations is relatively simple. Part of the solution was supplied by Barney[2] when he designed the Appalachian scale shelter. This shelter is an ideal installation for the measurement of fuel moisture sticks (fig. 2). Many stations are equipped with triple beam balances instead of Appalachian scales. In this event, a scale shelter similar to the one shown in figure 3 is appropriate.

Figure 2.--Appalachian scale shelter in use at fire-weather station.

[2]Richard J. Barney. Appalachian scale shelter. USDA For. Serv. Intermt. For. & Range Exp. Stn. Res. Note 88, 7 p., illus., 1962.

Figure 3.--A shelter built to house a triple beam balance.



Some fire-weather station managers may be reluctant to build scale shelters at this time because of the trend toward development of an inorganic fuel moisture analog for fire-danger rating. Such a device would replace fuel moisture sticks and hopefully eliminate the need for scales and scale shelters. The inorganic fuel moisture analog is *at least* 2 or 3 years away. Moreover, the final version of the new analog may have to be weighed--much in the same manner as fuel moisture sticks are weighed at present. Besides, what may happen 2 or 3 years from now is not a good excuse for collecting unreliable weather data this year. If a weather station is worth having, every effort should be made to insure the accuracy and comparability of the data collected.

ACCESSORY SHELTER

The remainder of the space problem can be eliminated by construction and use of an accessory shelter similar to that shown in figure 4. This shelter is actually a modification of the Appalachian scale shelter. It is designed to house a mechanical wind counter, a wind direction indicator, and a variety of tools and supplies, such as batteries, hygrothermograph ink and charts, psychrometer wicking, a supply of distilled water, brushes for cleaning instruments, etc. Even if the wind counter and wind direction indicator are located in a nearby office, the accessory shelter can still provide a handy all-purpose storage area at the weather station.

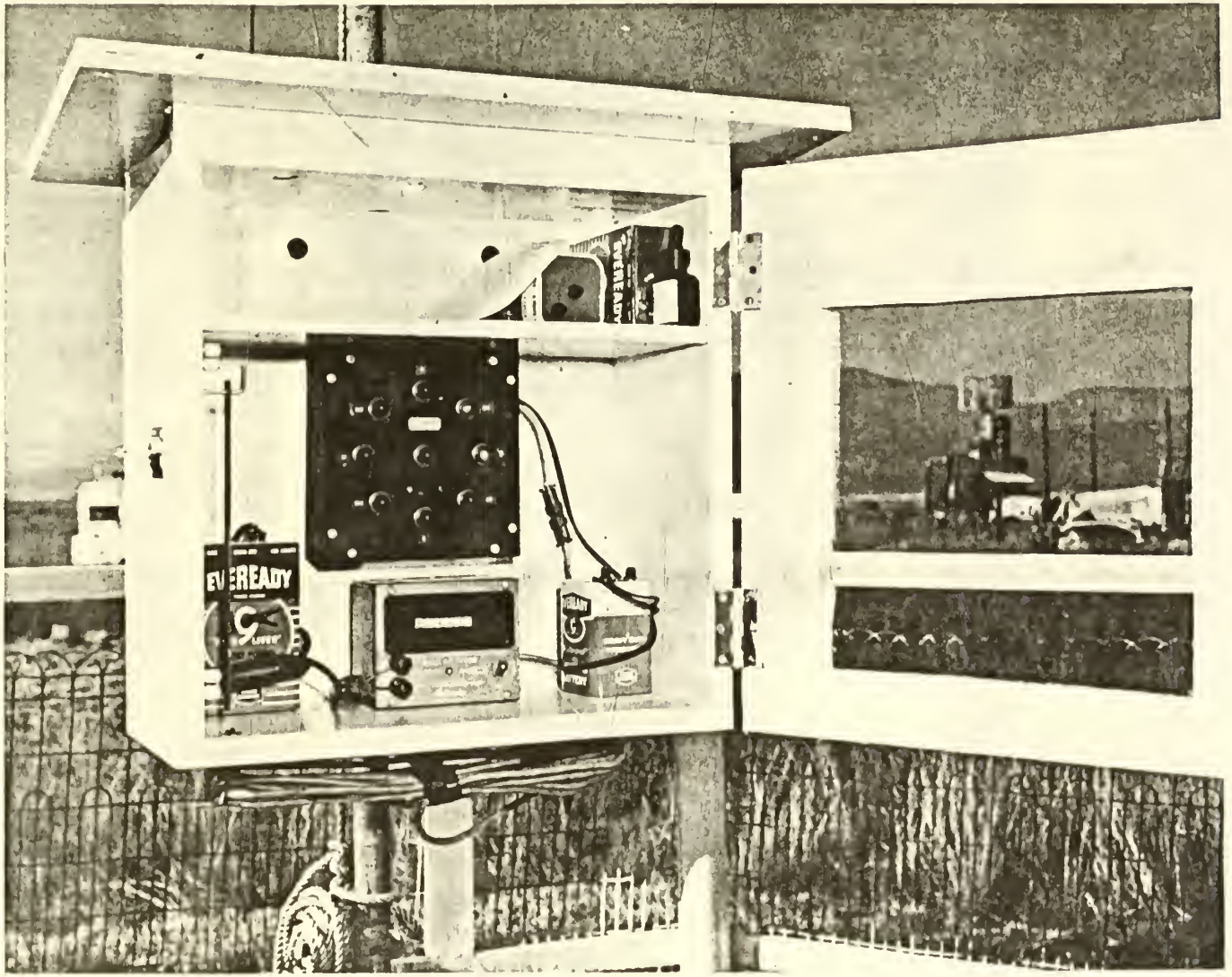


Figure 4.--Accessory shelter mounted on anemometer pole.

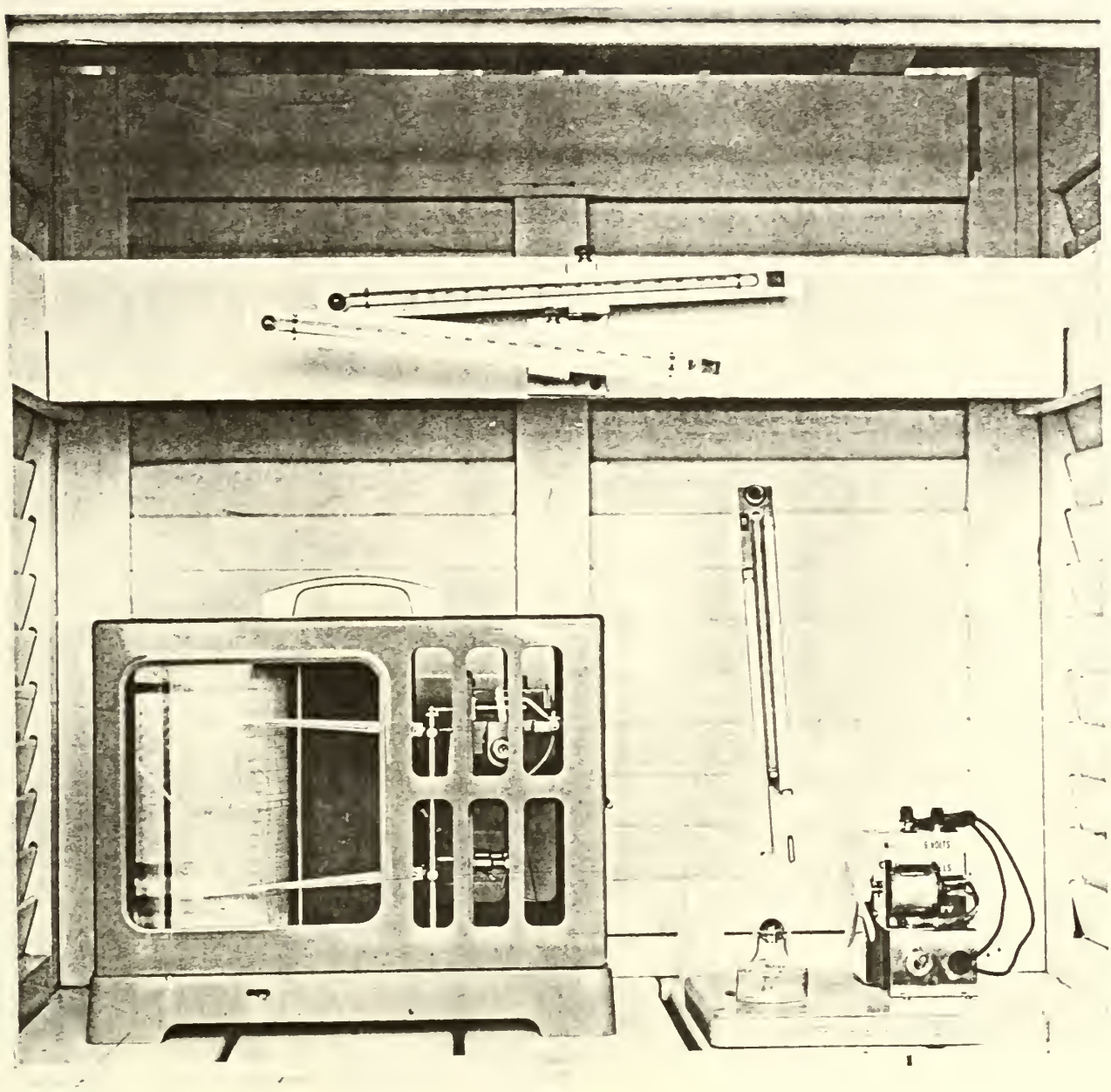


Figure 5.--Proper use of instrument shelter.

Construction details and installation instructions for both the Appalachian scale shelter and the accessory shelter are contained in the recently published "Fire-Weather Observers' Handbook."[3]

Use of these or similar type shelters at a fire-weather station will provide sufficient space for reading instruments that are not heat sensitive. The instrument shelter can then be used solely for the measurement of air temperature (fig. 5).

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[3]William C. Fischer and Charles E. Hardy. Fire-weather observers' handbook. USDA For. Serv., Intermt. For. & Range Exp. Stn., 152 p., illus., 1972.

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